

REMARKS

Claims 1-12 have been cancelled. Claims 13-33 are pending in the application. Claims 13, 15-16, 18, and 30-32 are rejected under 35 USC 102(b) as being anticipated by Czech '545. Claims 14, 17, 28-29 and 33 are rejected under 35 USC 103 as being unpatentable over Czech '545 in combination with various other references. Claims 19-27 are rejected under 35 USC 112, second paragraph, for a lack of antecedent basis because they depend from cancelled claim 1.

Rejection of claims under 35 USC 102 in view of Czech '545:

MPEP §2131 provides that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as contained in the claim. The elements must be arranged as required by the claim. The Czech reference fails to support a rejection under 35 USC 102 because it lacks a teaching of the step of performing a solution heat treatment as required by each of the rejected claims.

The Examiner cites page 5, lines 17-21 of Czech where Czech discloses a re-diffusion treatment as anticipating the claimed solution heat treatment. Examiner disagrees with the Applicant's assertion that Czech teaches away from the claimed invention at page 5, lines 19-20 where Czech states “[h]owever, the temperature should always be kept well below the solution temperature of the base material alloy.” Examiner states that “base material alloy” solution temperature encompasses the entire alloy not just the solution temperature of a given phase.

The applicant respectfully disagrees with the Examiner. The Czech patent teaches a method for refurbishing superalloys by first chemically/mechanically cleaning alloy bodies and subsequently applying an aluminide coating to completely remove any remaining corrosion products. The primary function of the aluminide coating in Czech is to enclose corrosion products, therefore the main emphasis of the patent is directed at refurbishing superalloys through the removal of corrosion, not through the restoration of the damaged microstructure as is taught and claimed in the present invention. Microstructure restoration is achieved with a

solution treatment at an appropriate temperature that allows diffusion of alloying atoms throughout the alloy. On page 5 lines 13-16, Czech teaches that “high activity pack” aluminization of the alloy surface requires “temperatures...to achieve aluminide coatings which enclose the corrosion products to be removed to a sufficient degree...” On page 4 lines 24-30 and page 5 lines 17-20, Czech states that such aluminization necessitates a high temperature re-diffusion step which is to be carried out at the same temperature ranges as the aluminization step, and that such temperatures should be maintained below the “solution temperature of the base material alloy.” Thus, the re-diffusion step taught in Czech is intended for the aluminium source of the aluminide coating, not for the atoms that make up crystalline phase structure of the alloy. In light of the scope of the Czech patent, the “solution temperature of a base material alloy” refers to the lowest temperature necessary for the formation of a given phase in an alloy that constitutes the particular microstructure of that alloy. Any temperature above that lowest solution temperature would result in a change in the crystal structure of the alloy of Czech, and would therefore destroy the functionality of the material by changing its mechanical properties. Therefore, Czech does not teach a solution temperature within the scope of the Applicant’s claims because Czech specifically teaches away from reaching the solution temperature required for diffusion of alloying atoms in order to prevent change in the microstructure of the base material alloy.

Rejection of claims under 35 USC 103 as being unpatentable over Czech '545 in combination with other references:

As described above in connection with the rejections under 35 USC 102, the Czech reference teaches away from the present invention, therefore, Czech as a primary reference in combination with any other reference fails to establish a *prima facie* case for the obviousness of any of the rejected claims, and these rejections should be withdrawn.

Rejection of claims under 35 USC 112:

The dependency of claims 19-24 has been amended herein to eliminate the dependency from cancelled claim 1, thereby overcoming the rejections under section 112.

Conclusion

Based on the above remarks and the amendments made herein, the application should now be in condition for allowance. The Commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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